

## Functions of the Skeletal System

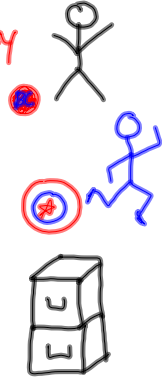
**Systems:** Groups of organs working together

**Bones ARE organs.** They are the organs of the Skeletal system. A definition of an organ is a group of cells and tissues performing a specific function in an organism.

Bones are living tissue.

### 5 Functions of the Skeletal System

1. support & shape the body
2. produces blood cells
3. allows movement
4. protects organs & tissues
5. stores certain materials

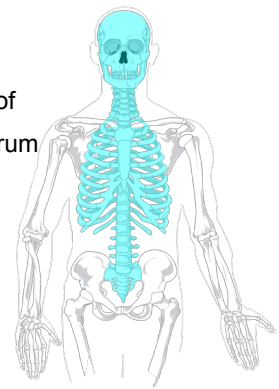


### Axial Skeleton:

**\*\*From Cranium, all of spinal column to sacrum and coccyx.**

Function:

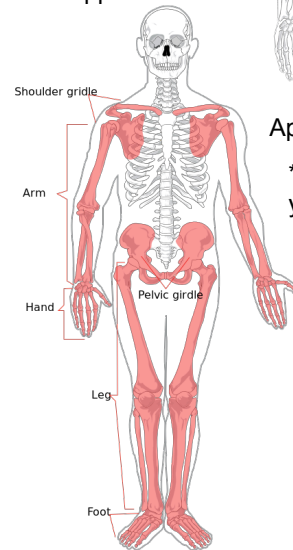
Support



### Appendicular Skeleton:

**\*\*All of your limbs of your body.**

Function:  
Movement

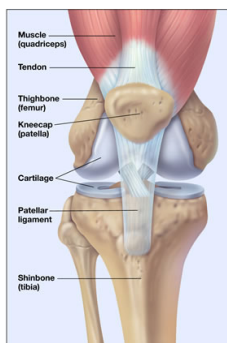


## Connective Tissue:

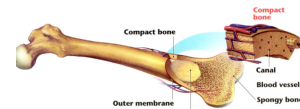
Ligaments: Connect bone to bone

Tendons: Connect bones to muscles

Cartilage: a very hard, stiff jellylike material that bones are formed from



### Compact Bone vs. Spongy Bone



Compact bone is dense and solid

Spongy Bone forms an open network of struts and plates (usually much lighter).

-Reduces weight of skeleton and makes it easier for muscles to move the bones.

**\*\*Both are present in typical bones of the skeleton**

\*Compact bone tissue forms the walls

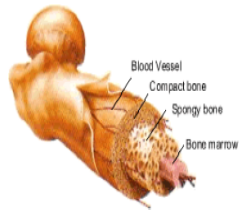
\*Spongy bone surrounds the medullary cavity which contains bone marrow (loose connective tissue that may be a mixture of red and yellow marrow).

Red Marrow: found in the ends of the bone (spongy bone)

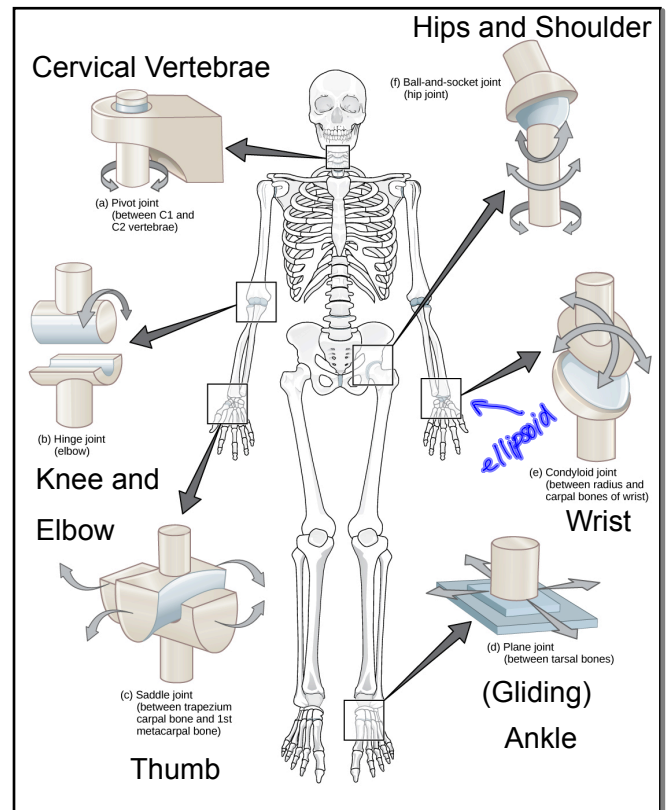
Yellow Marrow: found in the marrow cavity in the center of the bone (beneath compact bone)

Periosteum: the membrane that covers the compact bone.

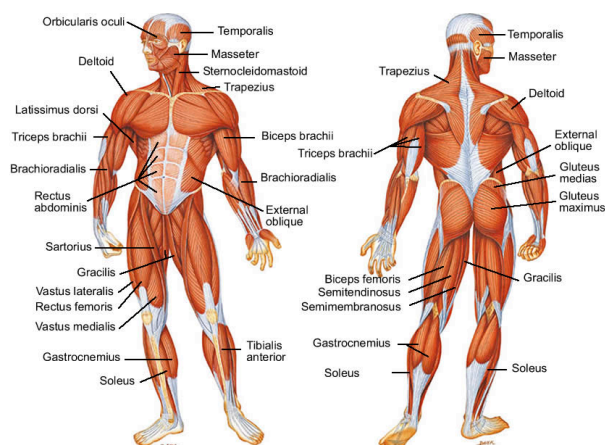
## Make-up of Your Bones!



30% living tissue cells  
45% mineral deposits  
25% water



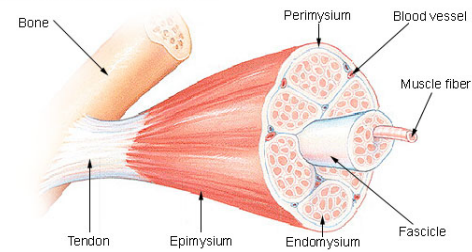
## There are over 650 muscles in the body!



Each muscle fiber is actually a cylinder-shaped cell

Muscle fibers run parallel to one another and are held together in bundles of connective tissue.

### Structure of a Skeletal Muscle



### 3 Functions of Muscles

1. **Movement:** works with the skeletal system to allow the body to move.

Most muscles work in pairs.



As they shorten, or contract, on one side, they do the opposite on the other side. (relax)

Muscles pull on bones

2. **Maintain body temperature:** homeostasis

shiver  
sweat



3. **Maintaining Posture**

Needed to stand straight

Muscles contract/relax when you are standing



### Three Types of Muscles

Skeletal

Smooth

Cardiac

Location:  
*attached to*  
Voluntary or Involuntary?

*✓*

What do they do?

*movement*

Location:  
*inside some organs → digestive org.*  
Voluntary or Involuntary?

*I*

What do they do?

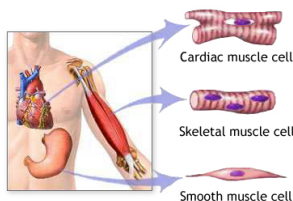
*inv. dig. system*

Location:  
*heart*  
Voluntary or Involuntary?

*I*

What do they do?

*heart beat*



#### Cardiac Muscle:

Located in the walls of the heart, appear striped, and are under involuntary control.

#### Smooth Muscle:

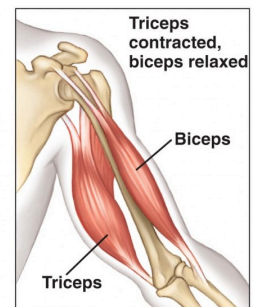
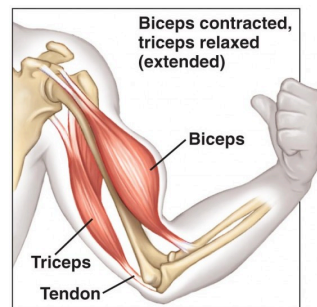
Located in walls of hollow organs, except the heart, and are under involuntary control. Responsible for movement of materials in organs

#### Skeletal Muscle:

Occur in muscles that are attached to the skeleton. They are striped and are under voluntary control.

### Muscles work in pairs!

**\*\*One contracts while the other relaxes**



### Exercise:

When you exercise regularly, your muscles may get bigger.

Cells reproduce more rapidly in response to increased activity.

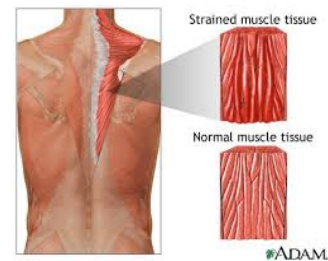


### Why do we get sore muscles?

During exercise, chemicals can build up in the muscles and make them cramp or ache.

\*\*The soreness is due to damage to the muscle fibers - overstretched or torn.

\*\*The body must remove injured cells and replace with new ones.



Fractures: a break in a bone

Because bones are made up of living tissue, it begins to heal almost immediately.

\*\*Broken blood vessels form a blood clot at the injured area

\*\*Minerals from the sharp ends of the bone are absorbed into the bloodstream.

\*\*Fibers of connective tissue grow out of the bone to hold the fractured ends together with a type of "glue."

### Types of Fractures:

- 1.
- 2.
- 3.
- 4.

Sprains: the ligaments or tendons get torn or pulled beyond their normal stretching range.

\*\*Still able to function, but painfully

Dislocation: a blow to the skeleton causes a bone to be forced out of its joint.

\*\*Can be pushed back into place

\*\*May require an artificial joint made of plastic or metal to replace badly damaged joint.